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EXAMINER

DAVIS, ROBERT B

ART UNIT PAPER NUMBER

1722

DATE MAILED: 09/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/974,958

Applicant(s)

WILLIAMS ET AL.

Examiner

Robert B. Davis

Art Unit

1722

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 June 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,4,8,10-12,20-22,25,29,31-33,40-42,45,49,51-53 and 60 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4,8,10-12,20-22,25,29,31-33,40-42,45,49,51-53 and 60 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 October 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Response to Amendment

1. Figures 1, 3A and 3B should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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4. Claims 1, 8, 10-12 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art (figures 3A and 3B of the instant application) taken together with Chen (6,096,250: figures 1-10, column 2, lines 12-24 and column 3, lines 1-67).

The admitted prior art discloses a leadframe (44) having opposed rails (60, 62) and a central portion to support a chip element.

Chen discloses a laminate plate (30) for supporting a central chip element and to be encapsulated by a packaging resin to protect the chip and associated leads to the chip element. The reference discloses increasing the adhesion of portions of the laminate plate to be covered with a molding compound by physical or chemical cleaning. The laminate plate originally has a property of low adhesion and the portion of the laminate plate used as the runner or gate portion is protected from cleaning such that the low adhesion property of the runner or gate portion is maintained. The laminate plate portion of the gate or runner is made of the same material as the molding compound covering portions. It is inherent that the relative low adhesion of the gate or runner portion is due to a decreased surface roughness.

It would have been obvious at the time of the invention to one of ordinary skill in the art to modify the leadframe of the admitted prior art by selecting a low adhesion material and cleaning the molding compound covered portions to increase adhesion as disclosed by Chen for the purpose of reducing flash resin at the gate or runner portion of the leadframe.

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5. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art taken together with Chen as applied to claims 1, 8, 10-12 and 20 above, and further in view of Osada (4,862,586: figures 1 and 2 and column 5, lines 5-22).

The combination of the admitted prior art and Chen disclose all features except for the treatment of both surfaces of the leadframe.

Osada discloses an injection mold for packaging a semiconductor element on a leadframe comprising surface treatment of the leadframe on both surfaces of the leadframe for affecting relative adhesion of the resin to the leadframe and a vent (12) located opposite of a gate (11).

It would have been obvious at the time of the invention to one of ordinary skill in the art to modify the leadframe of the previous combination by supplying adhesion treatment on both surfaces of a leadframe as disclosed by Osada for the purpose of equal treatment of the leadframe with respect to the adhesion of the injected potting material.

6. Claims 21, 29, 31-33, 40, 41, 49, 51-53 and 60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kurihara et al (Japanese reference 02-148816 A: figures 1-3 and the English abstract) taken together with Chen.

Kurihara et al teach a leadframe (1) having a coating of a mold release agent and a mold (3) having a pot (7), opposed mold halves (4, 5) and a plunger (8). The abstract states that the mold is heated and it is therefore inherent that mold heaters are used.

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The reference does not disclose runner area of the leadframe having a reduced surface portion.

Chen discloses a laminate plate (30) for supporting a central chip element and to be encapsulated by a packaging resin to protect the chip and associated leads to the chip element. The reference discloses increasing the adhesion of portions of the laminate plate to be covered with a molding compound by physical or chemical cleaning. The laminate plate originally has a property of low adhesion and the portion of the laminate plate used as the runner or gate portion is protected from cleaning such that the low adhesion property of the runner or gate portion is maintained. The laminate plate portion of the gate or runner is made of the same material as the molding compound covering portions. It is inherent that the relative low adhesion of the gate or runner portion is due to a decreased surface roughness.

It would have been obvious at the time of the invention to one of ordinary skill in the art to modify the leadframe of Kurihara et al by selecting a low adhesion material and cleaning the molding compound covered portions to increase adhesion as disclosed by Chen for the purpose of reducing flash resin at the gate or runner portion of the leadframe. The selectively cleaned portions of the laminate plate were well known equivalents for the leadframe coated with a release agent.

7. Claims 22, 25, 42 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kurihara et al taken together with Chen as applied to claims 21, 29, 31-33, 40, 41, 49, 51-53 and 60 above, and further in view of Osada.

The combination of Kurihara et al and Chen disclose all claimed features except for a vent being located opposite the mold cavity form the gate.

Osada discloses an injection mold for packaging a semiconductor element on a leadframe comprising surface treatment of the leadframe on both surfaces of the leadframe for affecting relative adhesion of the resin to the leadframe and a vent (12) located opposite of a gate (11).

It would have been obvious at the time of the invention to one of ordinary skill in the art to modify the previous combination by providing an air vent opposite an injection gate as disclosed by Osada for the purpose of allowing the injected resin to push air and volatiles out of the mold cavity upon injection of the resin into the mold.

It would have been obvious at the time of the invention to one of ordinary skill in the art to modify the leadframe of the previous combination by supplying adhesion treatment on both surfaces of a leadframe as disclosed by Osada for the purpose of equal treatment of the leadframe with respect to the adhesion of the injected potting material.

Response to Arguments

8. Applicant's arguments with respect to claims 1, 4, 8, 10-12, 20-22, 25, 29, 31-33, 40-42, 45, 49, 51-53 and 60 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP

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§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert B. Davis whose telephone number is 571-272-1129. The examiner can normally be reached on Monday-Friday 9-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Yogendra Gupta can be reached on 571-272-1316. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Robert B. Davis
Primary Examiner
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9/5/06